

LITTORAL AMPHIPODA OF VICTORIA

PART 1

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Abstract

A new genus of the Family Haustoriidae, a new species of *Urohaustorius*, and two new genera and species of the Family Oedicerotidae from Victoria, Australia, are described and figured.

Introduction

This paper describes four new Victorian Amphipoda, three of which have been observed in the euryhaline waters of Lake King (Gippsland), and one in the marine waters of Port Phillip Bay.

The work forms part of a comprehensive study of the ecological relationships of the Amphipoda of the major bays and inlets of the Victorian coastline. Other aspects of this study will be dealt with in subsequent papers.

Previous contributions to the taxonomy of the marine Amphipoda of South-Eastern Australia are scarce. Haswell (1882) made reference to the genera *Melita*, *Exoediceros*, *Talorchestia*, *Allorchestes*, *Aspidophoreia* and *Orchestia*, all of which he recorded off the New South Wales coast. Chilton (1923) recorded *Melita festiva* in Port Jackson; Whitelegge (1889) noted the presence of *Melita*, *Orchestia* and *Talorchestia* in Port Jackson and *Exoediceros fossor* in Botany Bay. Finally, Sheard (1936) referred to two species of *Urohaustorius* and to *Exoediceros maculosus* in Spencer Gulf, South Australia.

Thus it is evident that, apart from the work of Sayce (1901, 1902) and Williams (1962) on the freshwater Amphipoda of Victoria, there is a dearth of knowledge of this group, particularly of the southern Australian waters.

Family HAUSTORIIDAE

Genus *Urohaustorius* Sheard

Urohaustorius Sheard 1936, p. 445.

Type species by original designation: *Urohaustorius halei* (Sheard), 1936.

***Urohaustorius metungi* n. sp.**

(Fig. 1A-F, 2A-F, 3A-E)

DIFFERENTIAL DIAGNOSIS: To the author's knowledge, this is only the second reference to the genus *Urohaustorius* in Amphipod taxonomy. The form described below is undoubtedly closely related to those described by Sheard (1936), viz. *U. halei* and *U. vercoi*. The principal points of difference of the new form from these two species are as follows:

The third segment of the second antenna of the new form is about four times as long as the combined lengths of the first and second segments, and about one third of the length of the greatly expanded fourth segment. This third segment is relatively much larger than its counterpart in the earlier species of *Urohaustorius*.

In the second maxilla of the new form the outer plate is only a little wider than the inner plate whereas it is twice as wide in the other species.

Finally, the coxa of the fourth peraeopod in the new form differs somewhat from that of the earlier species in dimension and shape. In the species described hereunder this coxa is nearly as long as wide, whereas in *U. vercoi*, Sheard (1936) describes this feature as nearly as wide as long. In *U. halei* this coxa is 3 times as long as wide.

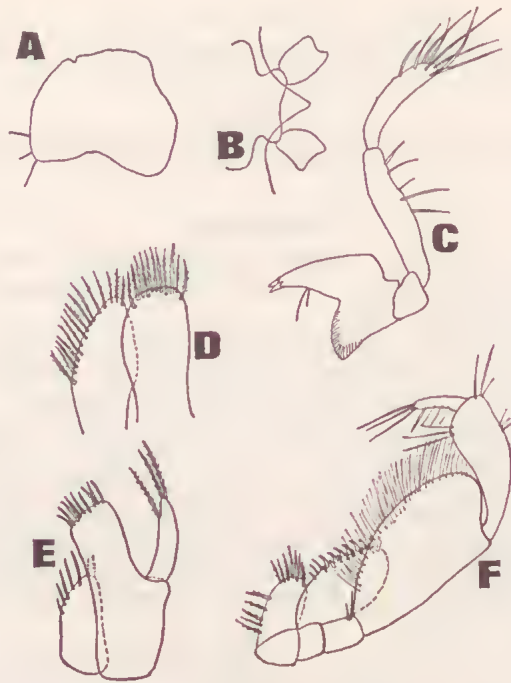


FIG. 1.—*Urohaustorius metungi* (n. sp.). A. Coxa of peraeopod 4, c. \times 20. B. Bilobed projection of head (partly covered by rostrum), c. \times 20. C. Left mandible, c. \times 40. D. Maxilla 2, c. \times 75. E. Maxilla 1, c. \times 75. F. Maxilliped, c. \times 50.

DESCRIPTION OF MALE: Maximum body length recorded, 8.0 mm; for the sample of 11 specimens examined the mean length was 5.5 mm (S.D. = 1.3); depth of body about one quarter of the length of the body. Head short, broader than long. Rostrum small, sharply pointed. Eyes lateral, well developed, not pigmented.

Antenna 1—The recorded variation in length ranged from 2.5 mm to 0.8 mm with a mean of 1.5 mm (S.D. = 0.6) for the 11 specimens examined.

As in *U. halei* (Sheard 1936), the pair of first antennae jointed to a small two-branched process arising from the frontal margin of the head; first segment large, sub-rectangular, furnished with tufts of spines on inner and outer distal margins; second segment subovate, half as long and half as broad as first segment,

well equipped with long setose spines; third segment small with a few distal spines; flagellum with 8 segments, with tufts of spines at the distal margins of each segment; accessory flagellum three quarters of length of main flagellum, with tufts of spines at the distal margins of each segment.

Antenna 2—Larger than antenna 1; first and second segments very small; third segment about four times as long as combined length of first and second segments and about one third length of greatly expanded fourth segment; fourth segment subrectangular, heavily spined and possessing 10 very long setose spines radiating from convex outer margin; fifth segment half the dimensions of fourth segment, but rounded distally and with convex inner and outer margins, a row of long setose spines arising from the outer margin; flagellum with eight segments with tufts of small spines at the distal margins of each segment.

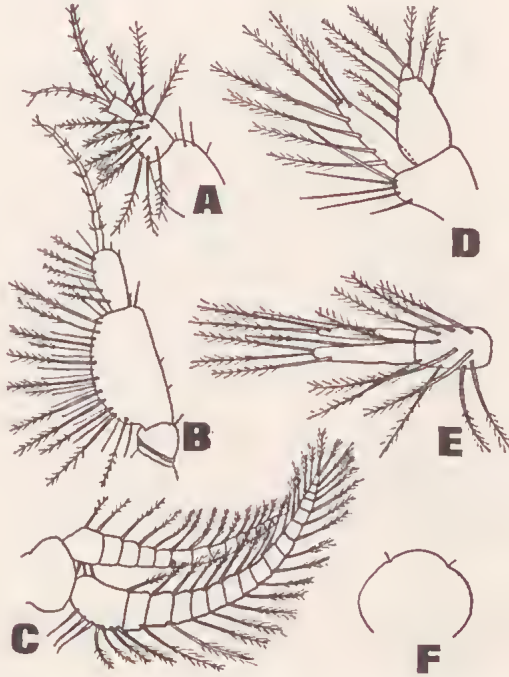


FIG. 2.—*Urohaustorius metungi* (n. sp.), A. Antenna 1, c. \times 20. B. Antenna 2 (male), c. \times 22. C. Pleopod 1, c. \times 20. D. Uropod 3, c. \times 35. E. Uropod 1, c. \times 22. F. Telson, c. \times 22.

Mouth Parts—Upper lip minutely setose at apex of broadly rounded distal margin. Lower lip, inner lobes prominent, minutely setose; outer lobes more heavily setose distally. Mandibles, cutting edge with about 5 teeth; secondary process absent; spinc row consisting of two simple spines; molar process heavily armoured; palp three-segmented; first segment as broad as long, devoid of spines; second segment long, subrectangular, with a few long spines on outer margin; third segment spatulate, three quarters length of second segment, furnished with long

spines distally and on inner margin. Maxilla 1, inner plate shorter and narrower than outer, tipped with short spines; outer plate heavily spined at truncated end; palp 1-segmented, terminating in three long setose spines. Maxilla 2, inner plate slightly shorter than outer, apical, with a distal cluster of setose spines; outer plate a little wider than inner with several rows of setose spines at the broadly rounded end. Maxillipeds, inner plate small, with several rows of large setose spines on rounded distal border, 4 or 5 very large setose spines on inner margin; outer plate subovate, reaching beyond the base of second palp segment, the long curved inner

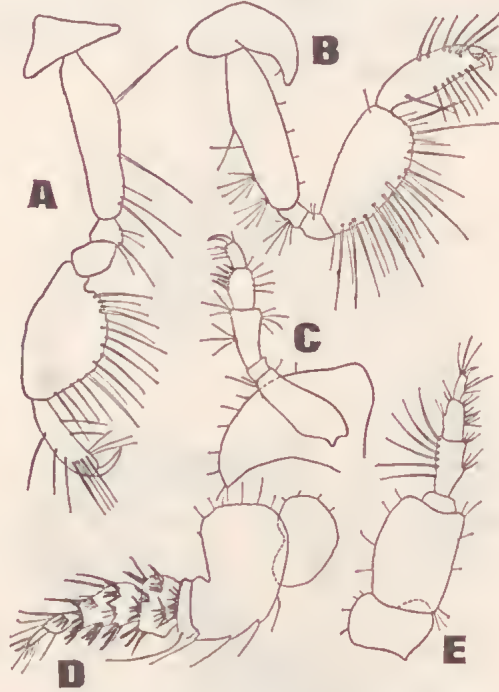


FIG. 3—*Urohaustorius metungi* (n. sp.) A. Gnathopod 1 (male), c. \times 32. B. Gnathopod 2 (male), c. \times 22. C. Peraeopod 1, c. \times 15. D. Peraeopod 3, c. \times 15. E. Peraeopod 4, c. \times 10.

margin furnished with several rows of heavy spines which lack setation; basos and ischium both small; palp consisting of four segments; the first segment nearly twice as long as ischium with one or two long spines just below the inner proximal angle of succeeding segment; the second segment the largest, broadly ovate, heavily fringed on inner convex surface with very long setae; the third segment broadening distally to form a club-shaped segment, tufts of long spines along inner distal and outer margins; the fourth segment tapering distally, about one third of length of third segment, inner margin lined with long simple spines, tipped with three very long simple spines.

Gnathopod 1—Segment 1 subtriangular, margins slightly concave, sparsely furnished with minute spines. Segment 2 elongate, somewhat constricted proximally,

length about four times maximum breadth; posterior surface has a few long setose spines. Segment 3 about as long as broad; a cluster of long spines on distal end of posterior margin. Segment 4 twice length of segment 3, subtriangular, posterior margin slightly convex. Segment 5 ovate, twice as long as broad, shorter but broader than segment 2; anterior margin devoid of setae or spines; posterior surface fairly heavily equipped with simple spines of varying lengths, many as long as breadth of segment 5. Segment 6, about two thirds length of segment 5; antero-distal margin has several fairly long spines; a row of long simple spines across the segment at distal two thirds. Palm straight, equipped with long spines. Segment 7, simple, spines absent.

Gnathopod 2—Larger than gnathopod 1. Segment 1 crescentic, basal margin concave, sparsely furnished with minute spines. Segment 2 elongate, subrectangular, length more than four times maximum width; a row of four short equally spaced spines along straight anterior margin, several clusters of long setose spines on distal half of broadly convex posterior margin. Segment 3 about as long as broad, long setose spines on distal end of posterior margin. Segment 4 slightly larger than segment 3, subovate, two tooth-like spines on anterior surface. Segment 5 subovate, slightly shorter and slightly broader than segment 2, anterior margin devoid of setae or spines except for one short spine in the antero-distal angle; posterior surface heavily spined with several rows of shorter spines and one row of about 12 very long spines. Segment 6, nearly as long as Segment 5, heavily spined on posterior surface, a row of long simple spines across segment at about one quarter of length from posterior end; postero-distal angle produced to form a stout tooth-like spine which bites with segment 7. Palm transverse, numerous small spines along edge. Segment 7, tip extending slightly beyond toothed spine of segment 6.

Peraeopod 1—Segment 1 large, subtriangular with broadly rounded anterior and posterior margins with slender spines on the postero-ventral margin. Segment 2, about two thirds length of segment 1, with several setose spines radiating from the postero-distal margin, a few smaller ones on anterior and posterior margins; length about three times maximum width. Segment 3 about as long as wide, a small group of simple spines postero-distally. Segment 4, length a little greater than twice the width; long spines at antero- and postero-distal angles, and on mid-posterior margin. Segment 5, ovate, length about twice the width, a row of long slender spines on anterior surface, five heavy spines and two slender simple spines on posterior surface. Segment 6, about two thirds length of segment 5, and about twice as long as wide; eight heavy spines on postero-distal margin, with numerous minute spines at their bases. Segment 7 sharp, slightly curved, more than half of the length of segment 6; a minute slender spine proximally.

Peraeopod 2—Segment 1 nearly as wide as long. Segment 2, one and a quarter times the length of the segment 1, with several long setose spines distally. Otherwise very similar to peraeopod 1.

Peraeopod 3—Segment 1 small, feebly bilobed, the lobes subequal, the posterior lobe equipped with a few simple marginal spines. Segment 2, the largest segment, greatly expanded to produce a subrectangular lobe posteriorly; a few long slender spines on curved anterior surface; a row of simple spines on the posterior margin of the expanded lobe. Segment 3, four times as broad as long, with a long spine at antero-distal angle, and heavily spined along distal edge. Segment 4, subrectangular, twice as broad as long, heavily spined over the whole segment. Segment 5 one and one half times as long as broad, tapering and elaborately furnished with several clusters of downwardly directed strong spines. Segment 6 narrow proximally,

expanding to maximum breadth of about half length of segment, similar in spination to segment 5. Segment 7, subovate, shorter and about one third as broad as segment 6, furnished with three strong spines distally.

Peraeopod 4—Segment 1 small, feebly bilobed, sparsely spined on posterior margin. Segment 2, subovate, as broad as segment 1 and twice as long as its depth, minutely produced antero-distally with two long spines in antero-distal angle; minutely spined around margin. Segment 3, small, sub-trapezoidal, devoid of spines. Segment 4 slightly broadened distally, slightly produced at postero-distal angle; clusters of fairly heavy spines on mid-anterior and antero-distal surfaces; posterior surface has elongate setose spines. Segment 5, subrectangular, furnished with clusters of very heavy spines on anterior and posterior surfaces. Segment 6, subrectangular, half dimensions of segment 5, heavily spined on anterior and distal surfaces. Segment 7, reduced to a massive tooth-like spine.

Peraeopod 5—Similar to *peraeopod 4*, but slightly smaller.

Pleopods—All alike, biramous, rami similar and much longer than peduncle; inner ramus somewhat shorter than outer, about 14 distinct segments compared with about 18 in outer ramus. Each segment has an inner and outer long setose spine at about midway, which is a peculiarly refractive region (Williams 1962).

Uropod 1—Rami subequal in length, slightly longer than peduncle. Outer ramus with 3 or 4 elongate setose spines borne terminally. Inner ramus with 1 or 2 elongate spines borne terminally. Peduncle about twice as long as broad, with row of very long spines on inner margin, an arc of 6 stout setose spines in horseshoe formation on dorsal surface.

Uropod 2—Like *uropod 1*. Outer ramus slightly longer and broader than inner. Peduncle about twice as long as broad. Spination almost identical with that of *uropod 1*.

Uropod 3—Rami subequal in length, outer much broader and two-segmented. Inner ramus with long setose spines distally and on inner margin. Outer ramus, basal segment with long setose spines distally and on inner margin, terminal segment with two long setose spines distally. Peduncle broader than long, proximally constricted; a cluster of simple spines of varying lengths at the inner-distal angle.

Telson—Entire, subcircular, two simple spines on distal margin.

Branchiostegites—Simple sac-like structures.

DESCRIPTION OF FEMALE: Maximum body length recorded, 7.5 mm; smaller than males of corresponding age. Apart from oostegites, females are morphologically similar to males except for slightly heavier spination and setation of males.

Oostegites—Thinly elongate, furnished with very long simple spines.

Colour—White, lacking pigment markings.

TYPES: *Locality*—The holotype is a male specimen from a collection made at Tambo Bay in the south-eastern corner of Lake King in September 1957.

Repository—The holotype (No. J.151) and paratypes (No. J. 152) are lodged at the Museum of Natural History, Melbourne, Australia.

VARIATION IN MATERIAL EXAMINED: Eleven specimens were dissected, four of which were males. The male forms varied in length from 8.0 mm to 4.5 mm, the females from 6.0 mm to 3.4 mm. In the sample examined variation in the length of the body and of the individual appendages is well marked, reaching a maximum in the fourth *peraeopod* with a mean length of 3.4 mm (S.D. = 0.7).

DISTRIBUTION: Present Records: *Victoria*: Lake King (September 1957). The distribution of *U. metungi* is indicated in Fig. 17. It will be observed from the available evidence that this species is restricted in its distribution to Tambo Bay, a shallow bay near the township of Metung from which the specific name of the animal has been derived.

ECOLOGICAL NOTES: The species was recorded in association with *Limnoporeia kingi* (n. sp.). It is a very efficient burrower in the fine sands of this bay.

KEY TO SPECIES OF GENUS *Urohaustorius*

1. Third segment of antenna 2 about four times as long as the combined length of the first and second segments *U. metungi* (n. sp.)
1. Third segment of antenna 2 about twice as long as the combined length of the first and second segments 2
2. Segment 1 of pereopod 4 as wide as long *U. vercoi*
2. Segment 1 of pereopod 4 at least three times as long as wide *U. halei*

ANATOMICAL STATISTICS OF *Urohaustorius metungi* (n. sp.)

Characteristic	Maximum (mm)	Minimum (mm)	Mean (mm)	Standard Deviation	Length of appendage/body length ratio
Body length (Rostrum to telson)	8.0	3.4	5.5	1.3	1.0
Antenna 1	2.5	0.8	1.5	0.6	0.3
" 2	3.0	1.0	2.0	0.7	0.4
Gnathopod 1	2.8	1.3	2.0	0.5	0.4
" 2	3.5	2.5	3.0	0.6	0.6
" 3	3.0	1.8	2.2	0.6	0.4
Pereopod 1	3.5	1.8	2.3	0.6	0.4
" 2	3.5	1.5	2.5	0.5	0.5
" 3	4.3	1.8	3.0	0.8	0.5
" 4	4.8	2.5	3.4	0.7	0.6
" 5	3.8	2.0	2.8	0.6	0.5
Pleopod 1	2.3	1.3	1.8	0.3	0.3
Uropod 1	1.5	0.8	1.0	0.3	0.2
" 2	1.5	0.5	0.9	0.3	0.2
" 3	1.0	0.3	0.6	0.3	0.1

Genus *Limnoporeia* (n.g.)

Type species: *Limnoporeia kingi* (n. sp.)

DEFINITION OF THE GENUS LIMNOPOREIA: Animal with a broadly rounded back. Head small with a pronounced rostrum projecting well forward. Eyes moderately large, lateral, heavily pigmented.

Antenna 1, first peduncular segment with a pronounced projection anteriorly, accessory flagellum well defined.

Antenna 2, about twice as long as antenna 1 in male, fourth peduncular segment very large.

Mandibles with cutting edge, molar process and spine row greatly reduced.

Maxillipeds with large four-segmented palp but with small inner and outer plates, the outer plate just reaching beyond the base of the second segment of the palp. Mouthparts otherwise normal as in the family *Haustoriidae*.

Gnathopods, in both sexes, chelate, with relatively large curved chelae and segments.

Peraeopod 4 the largest appendage, about one and one half times as long as other peraeopods. Segments of peraeopods not greatly expanded, except second segment of peraeopods 4 and 5.

Pleopods typical of the Family *Haustoriidae*.

Outer ramus of third uropod long, two-segmented.

Inner ramus less than one third of the outer.

Telson cleft to the base.

Coxal plates relatively deep on gnathopods 1 and 2 and peraeopods 1 and 2, but relatively shallower in remaining peraeopods.

DIFFERENTIAL DIAGNOSIS: This form bears some resemblance to the genus *Amphiporeia* (Shoemaker 1929), although the presence of a distinctive rostrum and a three-segmented accessory flagellum on antenna 1 excludes it from this genus. There is, however, a closer resemblance between this form and the genus *Pontoporeia* (Krøyer 1842) within the Family *Haustoriidae*, but there are significant differences. The outer ramus of uropod 3 is relatively long, not short as in *Pontoporeia*; in gnathopod 1 the sixth segment is longer than the fifth, and the latter is not expanded as in *Pontoporeia*. Further, the rostrum is distinctly elongated and hooded, covering the first segment of the peduncle of antenna 1. In this latter feature the new genus resembles *Platyschnopus*, but there are several distinguishing differences. These are the deep coxal plates of gnathopods 1 and 2 and peraeopods 1 to 3, the deeply cleft telson, the third and fourth segments of fourth and fifth peraeopods not greatly expanded, the fourth segment of gnathopods 1 and 2 not elongated, outer plate of maxilliped not reaching beyond second segment of palp as in *Platyschnopus*. Another feature of interest is the short process projecting anteriorly from the first peduncular segment of antenna 1 over the second peduncular segment.

Limnoporeia kingi (n. sp.)

(Fig. 4A-C; 5A-G; 6A-D; 7A-D)

DESCRIPTION OF FEMALE: Maximum body length recorded, 3.5 mm; eyes moderately large, lateral, heavily pigmented. Animal transparent apart from eyes. Rostrum relatively large, projecting well forward like a hood over the first and second segments of the peduncle of antenna 1.

Antenna 1—The recorded variation in length ranged from 0.75 to 0.50 mm with a mean of 0.60 mm (S.D. = 0.10) for the six specimens examined, five of which were female. Flagellum four to five segmented, the segments longer than wide, each with a circlet of setae distally. Accessory flagellum three to four segmented like primary flagellum, but shorter. Peduncle, first segment largest, with an anteriorly projecting process bearing a tuft of spines at its extremity, second segment two thirds length of first, third segment as long as but only half as broad as second, all segments heavily spined.

Antenna 2—In male about twice as long as antenna 1—equipped with numerous long spines; fourth peduncular segment the largest. Flagellum 9-10 segmented in male, 4-5 segmented in female, each segment with setae at the distal angles.

Mouth Parts—Upper lip, rounded and entire, setose distally. Lower lip, inner and outer lobes subovate, distal and inner margins setose. Mandibles, cutting edge lightly toothed; secondary process triuspid in appearance; molar process and spine

row greatly reduced; palp, 3-segmented; first segment short; second segment twice the length of first, bearing one stout spine; third segment two thirds length of second, equipped with 7 or 8 elongate spines apically. Maxilla 1, inner plate short, subovate, lacking spination and setation; outer plate subrectangular, heavily spined apically, palp slender, one-segmented, tipped with three or four simple spines. Maxilla 2, inner plate broader but a little shorter than outer plate, each plate with a group of spines apically. Maxillipeds, inner plate small, subrectangular, with two large spines at distal border; inner and outer margins devoid of spines; outer plate relatively small, narrow, rounded distally, bearing three stout spines on the inner margin distally; palp large, four-segmented; first segment subtrapezoidal; second

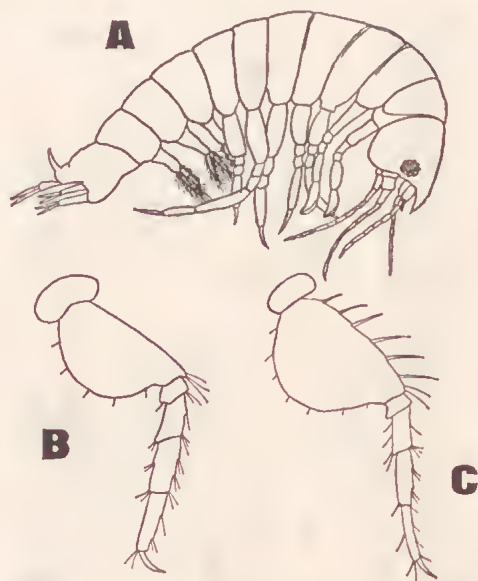


FIG. 4—*Limnoporeia kingi* (n. sp.). A. Complete female specimen, c. $\times 25$. B. Peraeopod 3, c. $\times 30$. C. Peraeopod 5, c. $\times 45$.

segment ovate, the largest, heavily spined on the convex inner margin; third segment subovate, half length of second; fourth segment small, tapering distally, bearing a heavy spine at its extremity.

Gnathopod 1—Chelate. Segment 1 subrectangular, depth about 1.5 times maximum width; anterior margin slightly concave; distal margin has a tuft of minute spines in the middle, a row of five heavy spines arranged along the postero-distal margin. Segment 2 somewhat constricted proximally, maximum width about one quarter of the length; a single elongate spine on the mid-posterior margin; a single minute spine in each of the antero-distal and postero-distal angles. Segment 3 longer than wide, a single spine on the postero-distal margin. Segment 4 subtrapezoidal, slightly longer than segment 3, a single spine near the postero-distal angle. Segment 5 sub-triangular, with a pair of spines medially on posterior margin. Segment 6 as long as segment 2 and wider, slightly curved with broadly convex anterior margin and concave posterior margin, tapering to a finely toothed tip, lightly spined along the distal margins. Palm oblique, slightly convex, extending

along more than one third of the anterior margin of segment 6, with numerous small simple spines along edge; two teeth at the distal end. Segment 7 almost as long as the palm; a small spine about half way along outer margin.

Gnathopod 2—Chelate. Segment 1 subrectangular, depth about twice the width; posterior margin almost straight; two large simple spines in the postero-distal angle. Segment 2 constricted proximally, as long as segment 1, maximum width about one third of length; a few simple spines on margins. Segment 3 slightly longer than broad, subrectangular. Segment 4 longer than segment 3, spines rare. Segment 5

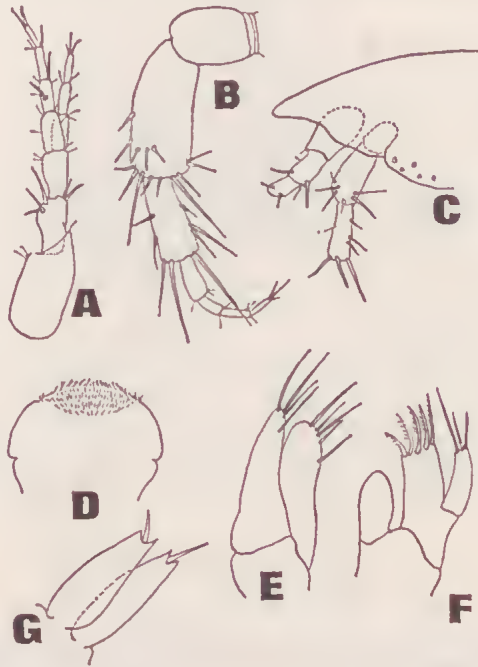


FIG. 5—*Limnoporeia kingi* (n. sp.). A. Antenna 1, c. \times 65. B. Antenna 2 (female), c. \times 65. C. Lateral view of rostrum showing peduncles of first and second antenna, c. \times 50. D. Upper lip, c. \times 150. E. Maxilla 2, c. \times 75. F. Maxilla 1, c. \times 75. G. Telson, c. \times 75.

slightly longer than segment 4, a few simple spines posteriorly. Segment 6 large, broader than segment 6 of gnathopod 1, but of same length and general shape. Palm oblique, slightly convex, extending along nearly half of the anterior margin of segment 6, with numerous spines of variable length. Two powerful teeth at the distal end of palm. Segment 7 elegantly curved, slightly longer palm; a small spine about half way along outer margin.

Peraeopod 1—Segment 1 subrectangular, anterior and posterior margins and distal margin almost straight; a row of four simple spines at the postero-distal angle. Segment 2 as long as segment 1, slightly narrower proximally than distally, with several long simple spines on the postero-distal margin, a few smaller ones

anteriorly; length about three times maximum width. Segment 3 about as long as wide, a slender spine in the postero-distal angle. Segment 4 length more than twice its width; the antero-distal angle produced distally; spined on the posterior margin. Segment 5 subovate, length about twice the width, spined on posterior and postero-distal margins. Segment 6, three quarters the length of segment 5, but more slender, spined on posterior and postero-distal margins. Segment 7, sharp, acutely curved, less than half as long as propod.

Peraeopod 2—Segment 1 as deep as wide, produced slightly at the postero-proximal angle, anterior and distal margins almost straight. Otherwise very similar to peraeopod 1.

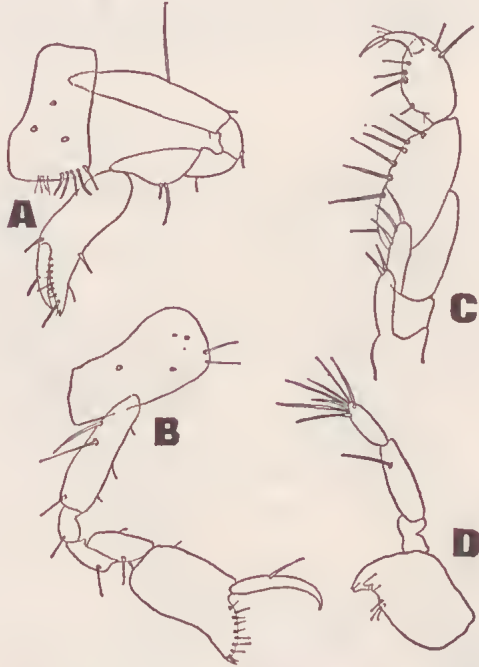


FIG. 6—*Limnoporeia kingi* (n. sp.). A. Gnathopod 1 (female), c. $\times 55$. B. Gnathopod 2 (female), c. $\times 50$. C. Maxillipeds, c. $\times 50$. D. Right mandible, c. $\times 50$.

Peraeopod 3—Segment 1 bilobed, posterior lobe larger than anterior. Segment 2 greatly expanded posteriorly; three long slender spines antero-distally; minutely spined posteriorly. Segment 3 subtrapezoidal, broader than long, with a tuft of spines at the antero-distal angle. Segment 4 widening distally, spined along anterior margin and in the postero-distal angle. Segment 5 subrectangular; about one and one half times as long as wide; spined on both anterior and posterior margins. Segment 6, about as long as segment 5, but about half its width; spined on anterior and posterior margins and at distal angles. Segment 7, only slightly curved.

Peraeopod 4—the longest, about one and one half times the length of other peraeopods. Segment 1 small, slightly expanded posteriorly, minutely spined.

Segment 2 greatly expanded, the anterior and antero-distal surfaces heavily spined. Segment 3 subtrapezoidal, spined on anterior surface. Segment 4 slightly constricted proximally; produced slightly in the postero-distal angle; spined along both anterior and posterior margins. Segment 5 subrectangular, clusters of spines at regular intervals along anterior margin. Segment 6 as long as segment 5, but only about half its width. Segment 7 only slightly curved.

Peraeopod 5—About two thirds length of peraeopod 4. Segment 1, smaller than that of peraeopod 4; subovate. Segment 2, enormously produced posteriorly. Otherwise like peraeopod 4.

Pleopods—All alike and unmodified. Biramous, rami similar and longer than peduncle; inner ramus slightly shorter than outer, of about 6 distinct segments as compared with about 8 in the outer ramus. Each segment has an inner and outer long spine.

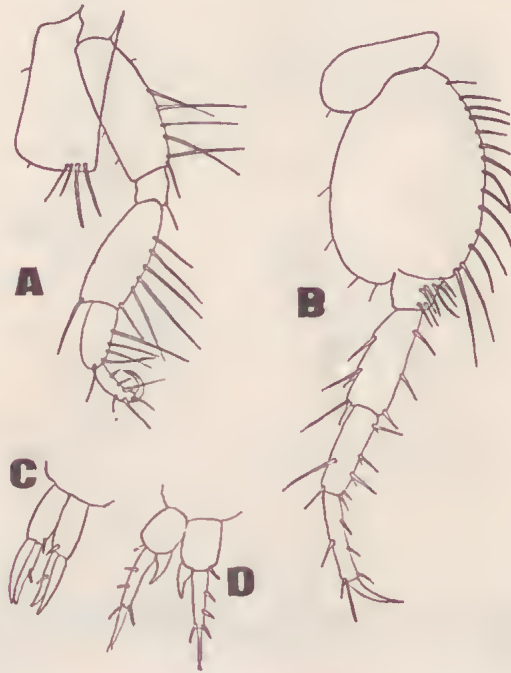


FIG. 7.—*Limnoporeia kingi* (n. sp.). A. Peraeopod 1, c. \times 40. B. Peraeopod 4, c. \times 45. C. Uropod 1, c. \times 20. D. Uropod 3, c. \times 35.

Uropod 1—Rami subequal in length and as long as peduncle. Outer ramus, devoid of spines. Inner ramus bears a single stout spine about half way along inner margin. Peduncle elongate, subrectangular, with a stout spine at the distal end near base of inner ramus.

Uropod 2—The smallest, extending only as far as first segment of the outer ramus of the third uropod. Rami subequal in length. Outer ramus slightly longer than inner, devoid of spines and setae. Peduncle subrectangular, with two stout spines at the distal end near the bases of the rami.

Uropod 3—Shorter than first. Outer ramus large, two segmented with strong spines on outer margin of first segment; second segment two thirds the length of the first segment, with two slender spines at tip. Inner ramus one half length of outer, devoid of spines, a small seta at tip. Peduncle, subrectangular, much broader than peduncles of uropods 1 and 2, with a stout spine at the distal end near base of outer ramus.

Telson—Relatively large, approximately half the length of the third uropod; cleft to the base, each lobe tipped with a heavy spine.

Gills—Simple sae-like structures.

Oostegites—Elongate, subrectangular, with distal end rounded and equipped with long spine-like projections.

DESCRIPTION OF MALE: Body length 4.0 mm (only one specimen available for examination). Gnathopods somewhat larger than those of female. Otherwise similar in structure to female.

TYPES: *Locality*—The holotype is one of a collection made in Jones' Bay, Lake King, Victoria, Australia in May 1957.

Repository—The holotype (No. J.153) and paratypes (No. J.154) are lodged at the Museum of Natural History, Melbourne, Australia.

VARIATION IN MATERIAL EXAMINED: Six specimens were available for examination, five of which were female. These specimens varied in length from 4.0 to 2.5 mm with a mean of 3.0.

The uropods show the greatest degree of variability with respect to length. For example, the third uropod showed a standard deviation of 0.3 with a mean length of 0.6 mm in the specimens examined.

DISTRIBUTION: Present records: *Victoria*: Lake King (March 1957). As indicated in Fig. 17, *Limnoporeia kingi* has been recorded as widely distributed throughout Jones' Bay as well as the main body of Lake King.

ECOLOGICAL NOTES: The species is associated in its distribution with *Paroediceropsis raymondi* (n. sp.).

ANATOMICAL STATISTICS OF *Limnoporeia kingii* (n. sp.)

Characteristic	Maximum (mm)	Minimum (mm)	Mean (mm)	Standard Deviation	Length of appendage/body length ratio
Body length (Rostrum to telson)	4.0	2.5	3.0	0.3	—
Antenna 1	0.75	0.5	0.6	0.1	0.2
" 2	1.50	—	—	—	0.4
" 2	1.0	0.75	0.8	0.1	0.3
Gnathopod 1	1.5	1.0	1.2	0.2	0.4
" 2	2.0	—	—	—	—
" 2	1.75	1.0	1.3	0.2	0.4
Peraeopod 1	1.5	1.0	1.3	0.2	0.4
" 2	1.5	1.0	1.3	0.2	0.4
" 3	1.75	1.25	1.4	0.2	0.5
" 4	2.25	1.5	1.7	0.3	0.6
" 5	1.5	1.0	1.1	0.2	0.4
Uropod 1	1.25	0.5	0.8	0.3	0.3
" 2	0.75	0.25	0.5	0.2	0.2
" 3	1.0	0.25	0.6	0.3	0.2
Pleopod 1	1.25	0.75	0.9	0.2	0.3

Family OEDICEROTIDAE

Genus *Amphoediceros* (n.g.)Type species: *Amphoediceros willisi* (n. sp.)

DEFINITION OF THE GENUS *Amphoediceros*: Animal with broadly rounded back. Head small with minute, bluntly pointed rostrum. Eyes reniform and convergent.

Maxillipeds and maxillae well developed; the inner and outer plates of maxillae liberally spined. Mandibles with strongly denticulate molar process and well developed three-segmented palp.

Antennae long and slender; accessory flagellum of the first antenna reduced to a minute one-segmented process.

Gnathopods subchelate. All peraeopods with well developed dactyls. Segment 1 of peraeopod 3 is bilobed posteriorly.

All uropod rami taper distally. Telson deeply cleft.

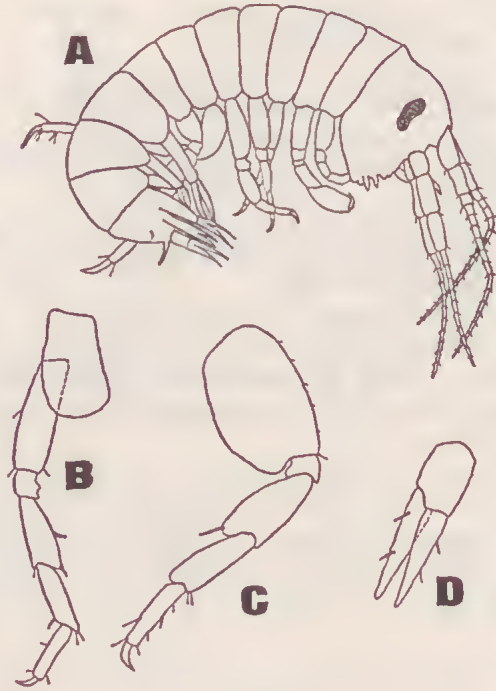


FIG. 8—*Amphoediceros willisi* (n. sp.). A. Complete female specimen, c. $\times 27$.
B. Peraeopod 1, c. $\times 30$. C. Peraeopod 3, c. $\times 35$. D. Uropod 3, c. $\times 37$.

DIFFERENTIAL DIAGNOSIS: This new genus possesses most of the family characteristics of the Oedicerotidae, including a rudimentary accessory flagellum to the first antenna, contiguous eyes, an elongated fifth peraeopod and a large mandibular palp.

Stebbing (1906), in his diagnosis of the family Oedicerotidae, describes the telson as small and entire. Several genera have been added to the family since Stebbing's work was published and, of these, two forms display a deeply emarginate

telson. These are *Methalimedes nordenskjoldi* (Schellenberg 1931) and *Paroediceroides sinuata* (Schellenberg 1931). In the genus described here the telson is quite elongate and deeply cleft. Thus it would seem that this tendency towards the division of the telson should be included in the family diagnosis.

In having a cleft telson, the new genus shows some similarity to *Methalimedes* and *Paroediceroides*, in both of which the telson is deeply emarginate. However, many other differences separate it from these genera. The closest genus appears to be *Exoediceros* (Stebbing 1899), with the following major differences: In *Exoediceros*, the telson is entire and as broad as it is long, whereas in the new genus this character is deeply cleft and elongate. In *Exoediceros*, the first and second peraeopods lack dactyls, while those of the third and fourth peraeopods are minute. In the new genus the dactyls are well developed on all of the peraeopods. The inner plate of the first maxilla of *Exoediceros* is setose, while in the new genus it is spined. In *Exoediceros*, finally, the rami of the third uropod are truncated apically, but in the new genus each ramus tapers to a fine point distally.

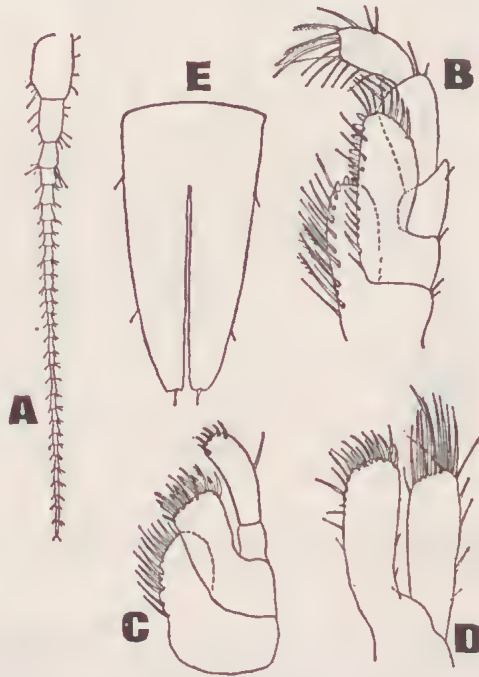


FIG. 9—*Amphoediceros willisi* (n. sp.). A. Antenna 1, c. \times 20. B. Maxillipeds, c. \times 25. C. Maxilla 1, c. \times 40. D. Maxilla 2, c. \times 40. E. Telson, c. \times 20.

***Amphoediceros willisi* (n. sp.)**

(Fig. 8A-D; 9A-E; 10A-F; 11A-D)

DESCRIPTION OF MALE: Maximum recorded body length 4.3 mm; for the sample population of fourteen specimens which were examined, the mean body length was 4.1 mm (S.D. = 0.2); depth of the body about one quarter the length of the body. Eyes, reniform, convergent, darkly pigmented, about half maximum

depth of the head, enveloping the base of the first antenna. Rostrum bluntly pointed and minute.

Antenna 1—Flagellum up to about 40 small segments, the proximal segments generally broader than long, and the distal segments longer than broad, each with tufts of slender spines in the distal angles. Peduncle, the first segment the largest and broadest, the second about three quarters of the dimensions of the first, the third one half the length and three quarters the breadth of the second segment;

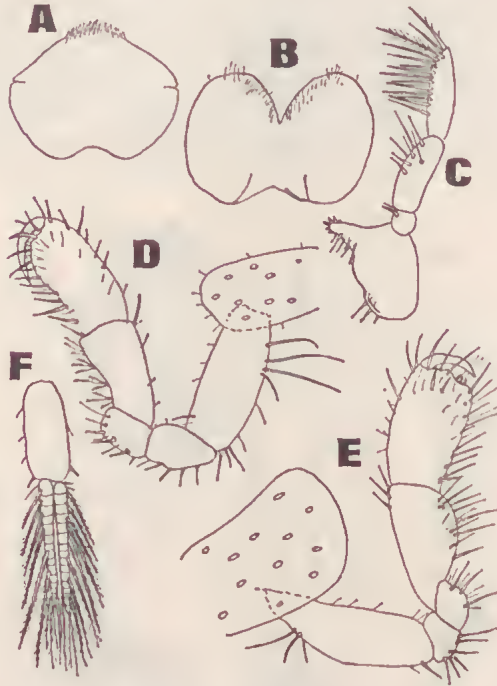


FIG. 10—*Amphoediceros willisi* (n. sp.). A. Upper lip, c. \times 150. B. Lower lip, c. \times 150. C. Left mandible, c. \times 100. D. Gnathopod 1 (male), c. \times 70. E. Gnathopod 2 (male), c. \times 70. F. Pleopod 1, c. \times 25.

the first segment with a few slender spines of varying lengths along the margins; the second and third segments with tufts of spines at the distal angles as well as variable spines scattered along the margins. Accessory flagellum greatly reduced, consisting of a minute one-segmented process tipped with two long spines.

Antenna 2—Flagellum up to 35 segments, structure similar to that of antenna 1, but lacking accessory flagellum. Peduncle, segments subequal in length but progressively narrower; third segment considerably narrower than that of antenna 1; all segments more heavily spined than in antenna 1.

Mouth Parts—Upper lip entire, setose distally. Lower lip, inner lobes absent; principal lobes subovate, distal margins setose. Mandible, cutting edge a small six-toothed process; secondary process tricuspoid in appearance; molar process strongly denticulate, several setose spines proximally. Palp, first segment, subrectangular

with a long spine at the outer distal angle; second segment long, bearing long spines on inner margin; third segment as long as second, broadly convex on outer margin, bearing long spines on inner and distal margins. Maxilla 1, inner plate subovate, a row of long simple spines on convex inner surface; outer plate as long as inner, a cluster of heavily combed and toothed spines at truncate distal border; palp two-segmented, the first segment short subrectangular, the second long and curved, a single long spine on outer margin, a cluster of short heavy spines on distal margin. Maxilla 2, inner plate subequal with outer, and with a distal cluster of spines, outer margin furnished with long setae; outer plate subrectangular, distal margin flatly convex and with a cluster of long inwardly curved spines, outer distal margin with a few long fine setae. Maxillipeds, inner plate subrectangular, outer margin convex, inner margin lined with large setose spines, heavily spined on truncate distal border, three of these spines modified as well defined teeth; outer plate semi-circular reaching nearly to end of second segment of palp, distal region of outer margin bearing about seven long simple spines, inner distal margin strongly toothed, proximo-distal margin bearing long simple spines; palp four-segmented; first segment distal margin oblique, two small simple spines at outer distal angle; second segment, one and one half times the length of first, broadly ovate, a few simple spines on outer margin and at outer distal angle, a row of long simple spines lining the entire inner margin; third segment half the width of the second, copiously spined; fourth segment half the length of the third, tipped with several spines.

Gnathopod 1—Subchelate. Segment 1 subrectangular, broadly rounded distally, depth about one and one half times breadth; distal margin minutely spined. Segment 2 constricted proximally, maximum breadth less than half length; a few simple short spines on anterior margin; long spines on mid-posterior margin and at postero-distal angle. Segment 3 slightly longer than broad; spined along posterior margin. Segment 4 slightly smaller than segment 3, subrectangular; a row of long spines on postero-distal surface. Segment 5 widening distally; heavily endowed along posterior margin with long setose spines, a few long simple spines also along this surface. Segment 6, subrectangular, one and one quarter times the length of segment 5, fairly profusely spined on all surfaces; palm convex, bearing two rows of tooth-like spines, and many simple spines along its length. Segment 7, a little longer than palm; a small spine on outer margin about one third distance from base.

Gnathopod 2—Subchelate; as long as, and similar to gnathopod 1. Segment 1 subrectangular with broadly rounded distal margin, the latter minutely spined. Segment 2, like that of gnathopod 1, but with a group of four spines at the antero-distal angle in addition. Segment 3, twice as long as broad; a cluster of small simple spines about one quarter way along posterior margin from base. Segment 4; subrectangular, a row of eight long simple spines along distal margin. Segment 5 as in gnathopod 1. Segment 6 slightly longer than segment 5, subrectangular; rows of long simple spines regularly spaced along anterior surface; posterior surface similarly equipped, but with much heavier spines; palm, flatly convex, with many simple spines and a few heavy tooth-like spines along its length. Segment 7, tip slightly short of the end of palm; a simple spine on outer margin near base.

Peraeopod 1—Segment 1 subrectangular with a rounded dissection at the antero-proximal angle, minutely setose along entire margin. Segment 2 as long as side-plate is broad, subrectangular, minutely curved, several long simple spines on anterior and posterior surfaces, a pair of such spines in each of the postero-distal and antero-distal angles; length about four times maximum width. Segment 3

slightly broader than long, a pair of simple spines in the antero-distal angle. Segment 4, length about twice maximum width and about three times length of segment 3, several spines on anterior margin, a single spine on the mid-posterior margin; postero-distal angle slightly produced along posterior surface of segment 5, a cluster of spines at this angle. Segment 5, subrectangular, as long as segment 4, anterior surface with a row of simple spines. Segment 6, slightly longer than segment 5 but narrower, rectangular, similarly spined to segment 5. Segment 7, curved and sharply pointed, a stout spine near base, bearing several spines near tip.

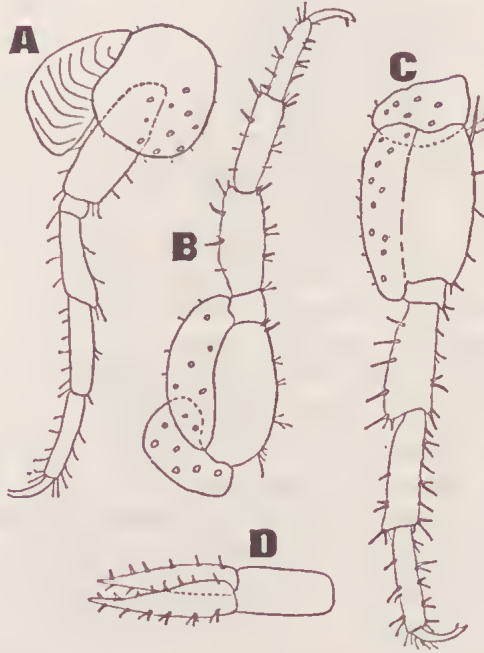


FIG. 11—*Amphoediceros willisi* (n. sp.). A. Peraeopod 2 (with side plate and gill attached), c. \times 45. B. Peraeopod 4, c. \times 40. C. Peraeopod 5, c. \times 37. D. Uropod 2, c. \times 60.

Peraeopod 2—Segment 1 almost circular, minutely setose; Segment 2 as long as segment 1 but one third its width. In other respects identical with peraeopod 1.

Peraeopod 3—Segment 1 bilobed posteriorly. Segment 2 subovate, posteriorly expanded, posterior margin setose, pairs of short stout spines at regular intervals along anterior surface, a group of such spines antero-distally. Segment 3, slightly broader than long, antero-distal angle with a cluster of stout spines. Segment 4, length about two and one half times maximum breadth, clusters of spines along anterior and posterior surfaces, some of the spines being bifurcated, postero-distal angle slightly produced along length of segment 5. Segment 5 heavily spined along anterior and posterior surfaces as in segment 4, posterior angle also produced slightly. Segment 6, subrectangular, slightly shorter and narrower than segment 5, with clusters of bifurcated spines along both anterior and posterior surfaces. Segment 7 as in peraeopods 1 and 2.

Peraeopod 4—Segment 1 subovate, greatly expanded posteriorly, minutely setose. Otherwise similar to peraeopod 3.

Peraeopod 5—Segment 1 smaller than that of peraeopod 4, ovate, minutely setose. Peraeopod 5 greatly elongated attaining a mean length of 2.1 mm (S.D. = 0.1) for the 14 specimens examined. Similar to peraeopods 3 and 4 except that postero-distal angle of segment 4 is more definitely produced distally; all segments more heavily spined than in previous appendages.

Pleopods—All alike and unmodified; biramous; rami similar and longer than peduncle; inner ramus slightly shorter than outer, of about 12 segments as compared with about 14 in the outer ramus; each segment bears an inner and outer long setose spine at the distal angles.

Uropod 1—The longest, reaching almost as far as uropod 3; rami subequal in length, about three quarters length of peduncle; outer ramus bearing a row of three short spines on inner margin, three or four spines distally, inner ramus of similar structure to outer, distal spines a little stouter than proximal; peduncle with a row of about six short spines on inner margin.

Uropod 2—Reaching to point about three quarters length of uropod 3; inner ramus longer than outer, both of similar structure to those of uropod 1 but with spines on outer margins as well as inner.

Uropod 3—Peduncle short, bearing a stout spine in each distal angle; rami subequal, broad at base and tapering distally, inner ramus overlapping outer dorsally; both rami with strong spines along margins.

Telson—Large, subtriangular with truncated end, deeply cleft, bearing a few slender spines on distal margin.

DESCRIPTION OF FEMALE: Maximum body length recorded 4.1 mm; smaller than males of corresponding age. Apart from the presence of oostegites, females are morphologically similar to males. Oostegites elongate, furnished with long simple spines.

TYPES: *Locality:* The holotype is one of a collection made at Canadian Bay, Port Phillip, Victoria, Australia in March 1963.

Repository: The holotype (No. J.155) and paratypes (No. J.156) are lodged at the Museum of Natural History, Melbourne, Australia.

VARIATION OF MATERIAL EXAMINED: Fourteen specimens were dissected, six of which were female. The male forms varied in length from 4.3 mm to 3.8 mm (S.D. = 0.2); the females varied from 4.1 mm to 3.7 mm (S.D. = 0.2). The first antenna and fifth peraeopod attain the greatest length, the former showing a maximum of 3.0 mm to a minimum of 2.6 mm (S.D. = 0.1), the latter varying from 2.3 mm to 1.9 mm (S.D. = 0.1).

DISTRIBUTION: Present records: *Victoria*—Port Phillip Bay. Canadian Bay (March 1963), Dromana Beach (March 1963), Mornington Beach (March 1963), Rye Beach (March 1963). The recorded distribution of *Amphoedicerus willisi* suggests restriction of the species to the south-eastern coastline of Port Phillip Bay.

ECOLOGICAL NOTES: The species occurs among the seaweeds in small rock pools. It was not observed to be a strong sand burrower.

ANATOMICAL STATISTICS OF *Amphoediceros willisi* (n. sp.)

Characteristic	Maximum (mm)	Minimum (mm)	Mean (mm)	Standard Deviation	Length of appendage/body length ratio
Body length (Rostrum to telson) ♀	4.1	3.7	3.9	0.2	—
♂	4.3	3.8	4.1	0.2	—
Antenna 1	3.0	2.6	2.8	0.1	0.7
" 2	2.3	1.8	2.1	0.2	0.5
Gnathopod 1	1.3	1.0	1.1	0.1	0.3
" 2	1.3	1.0	1.2	0.1	0.3
Peraeopod 1	1.8	1.4	1.6	0.1	0.4
" 2	1.6	1.4	1.5	0.1	0.4
" 3	1.6	1.4	1.5	0.1	0.4
" 4	1.9	1.5	1.7	0.1	0.4
" 5	2.3	1.9	2.1	0.1	0.5
Uropod 1	1.0	0.8	0.9	0.1	0.2
" 2	0.6	0.4	0.5	0.1	0.1
" 3	0.7	0.4	0.6	0.1	0.1
Pleopod 1	1.3	1.0	1.2	0.1	0.3

Genus *Paroediceropsis* (n.g.)Type species: *Paroediceropsis raymondi* (n. sp.)

DEFINITION OF THE GENUS *Paroediceropsis*: Animal with broadly rounded back; first six peraeon segments contracted, seventh and all pleon segments much broader in lateral view than those anterior to them. Epistome prominent; rostrum weak, eyes large, showing great variability in position, in some specimens lateral, others almost dorsally contiguous.

Antennae well developed. The first peduncular segment of first antenna the longest and broadest of the three. Antenna 1 lacks accessory flagellum. Antenna 2 about one and one half times the length of antenna 1.

Mandible well developed, with strong 3-segmented palp and molar process. Maxillae and maxillipeds normal.

Gnathopods subchelate and well developed.

Peraeopods normal; coxal plates of peraeopods 3, 4 and 5 diminutive. Peraeopod 5 the longest.

Pleopods alike and unmodified.

Uropods normal; uropod 1 the longest.

DIFFERENTIAL DIAGNOSIS: *Paroediceropsis raymondi* (n.g.; n. sp.) shows some resemblance to the genus *Oediceropsis* (Lilljeborg 1865) and the genus *Exoediceropsis* (Schellenberg 1931), but, in this author's opinion, the differences are sufficiently marked to warrant the establishment of a new genus.

The new genus differs from *Oediceropsis* in having well developed third and fourth peracopods which bear diminutive coxal plates. In addition the first antennae of the new genus are shorter than the second antennae, but by no means as short as in *Oediceropsis* in which they do not reach as far as the second last peduncular segment of the second antennae. In the case of the latter genus, Lilljeborg (1865) claims that the eyes are hardly visible, which is far from the case in the new genus.

The new genus also displays dactyls on the third and fourth peraeopods, the mandibular molar process is powerfully developed, the peduncular segments of the first antennae are not short, and the inner lobes of the first maxillae are spined along the distal margins. In these latter ways the new genus *Paroediceropsis* can be clearly distinguished from the obviously related genus *Exoediceropsis*.

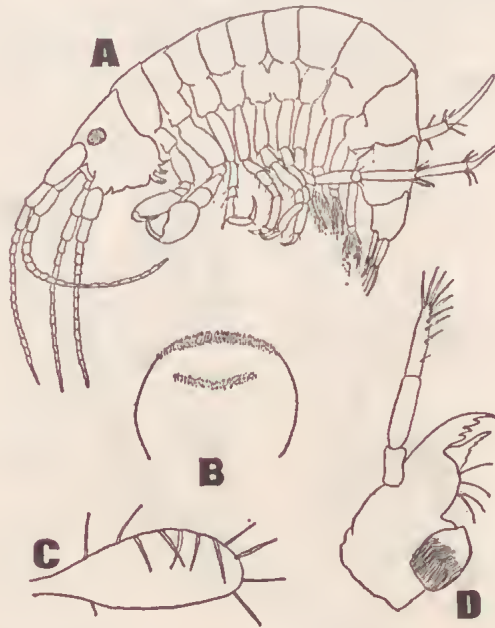


FIG. 12—*Paroediceropsis raymondi* (n. sp.). A. Complete male specimen, c. $\times 37$. B. Upper lip, c. $\times 200$. C. Oostegite (female), c. $\times 75$. D. Mandible, c. $\times 125$.

***Paroediceropsis raymondi* (n. sp.)**

(Fig. 12A-D; 13A-E; 14A-E; 15A-D)

DESCRIPTION OF MALE: Maximum body length recorded 5.0 mm. Head truncated anteriorly. Eyes large, heavily pigmented; position of eyes shows great variability; in some specimens eyes distinctly lateral, in others almost contiguous. Rostrum very small, bluntly rounded. Epistome very prominent. First six peraeon segments contracted; seventh peraeon segment and all pleon segments much broader in lateral view than those of anterior segments of peraeon. Colour, golden brown with characteristic red markings.

Antenna 1—Mean length for the sixteen specimens examined was 1.00 mm (S.D. = 0.4). Flagellum of 15 to 20 segments, the number increasing with age; segments longer than wide, each with a circle of setae distally. Peduncle, first segment subrectangular; the second a little shorter and considerably narrower than first, tapering distally; the third subrectangular, two thirds length of second. Each peduncular segment with weak spines distally.

Antenna 2—Mean length for the sixteen specimens examined was 1.5 mm (S.D. = 0.5). Flagellum of up to 25 segments, the number increasing with age; segments like those of flagellum of antenna 1. Peduncle, third segment subtriangular, small; the fourth subrectangular, a little more than twice as long as the first, the fifth subrectangular, as long but narrower than the second. Each peduncular segment with a ring of spines distally.

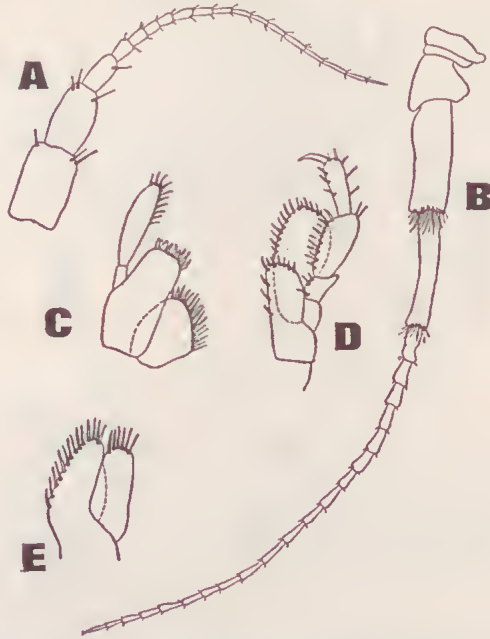


FIG. 13—*Paroediceropsis raymondi* (n. sp.). A. Antenna 1, c. \times 65. B. Antenna 2, c. \times 65. C. Maxilla 1, c. \times 22. D. Maxilliped, c. \times 15. E. Maxilla 2, c. \times 22.

Mouth Parts—Upper lip rounded, entire, lightly setose distally. Lower lip, outer and inner lobes setose along distal and inner margins. Mandible, cutting edge with four powerful teeth; secondary process well developed; spine row consisting of 4 large spines; molar process large, strongly denticulate; palp three-segmented, first segment short, second segment twice length of first, third tapering, as long as second, lightly spined on inner margin, tipped with several long spines. Maxilla 1, outer lobe subrectangular, bordered distally by a row of nine tooth-like spines; palp slender, two-segmented, broadening distally, tipped with a row of heavy spines; inner lobe as broad as long, provided with long spines along the distal margin. Maxilla 2, lobes equal in length, inner lobe pear-shaped, spined on inner and distal margins, outer lobe subrectangular with row of spines distally. Maxillipeds, inner plate having inner and distal margins straight, outer margin broadly convex, heavily spined on truncated distal border; outer lobes considerably longer and wider than inner, approximating to semi-circular shape, row of spines on inner margin; palp four-segmented, the first segment short, the second three times as long as first, and as long as but broader than the third; the fourth segment short, curved, sharply pointed.

Gnathopod 1—Segment 1 subrectangular, depth about one and one half times width; posterior and distal margins lightly setose. Segment 2 slightly constricted proximally, maximum width about one third length; a few simple spines anteriorly. Segment 3 one and one half times as long as broad. Segment 4, subtrapezoidal, postero-distal margin lightly spined. Segment 5 twice the length of the segment 4, anterior margin broadly convex, posterior margin quite profusely spined. Segment 6 ovate, a cluster of long spines at the antero-distal angle; palm slightly convex, with a small protruberance at the anterior end; numerous small simple spines along the edge. Segment 7 as long as palm, a small spine on outer margin about one third distance from base.

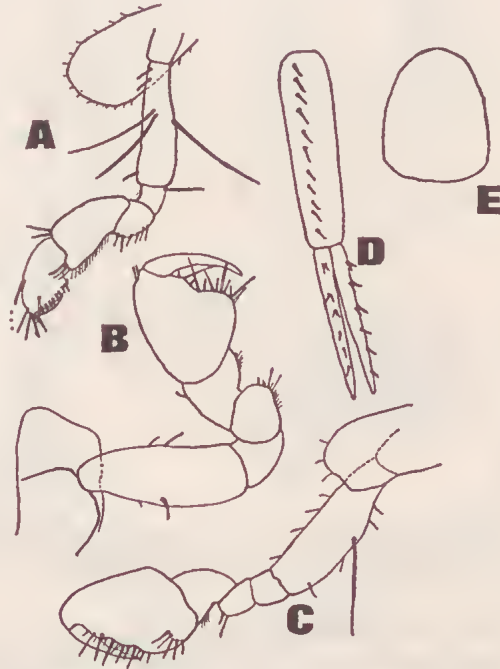


FIG. 14—*Paroediceropsis raymondi* (n. sp.). A. Gnathopod 1 (male), c. \times 45. B. Gnathopod 2 (male), c. \times 50. C. Gnathopod 2 (female), c. \times 50. D. Uropod 1, c. \times 50. E. Telson, c. \times 50.

Gnathopod 2—Segment 1 similar to that of gnathopod 1, but with postero-distal angle expanding downwards. Segment 2 slightly constricted proximally, length about three times maximum width; a few spines on both anterior and posterior margins. Segment 3 longer than broad. Segment 4 slightly larger than segment 3, a few simple spines postero-distally. Segment 5 slightly larger than segment 4, broadening distally, a few small simple spines posteriorly, one larger spine at the antero-distal angle. Segment 6 large, length about 1.5 times breadth; anterior and posterior margins broadly convex, the whole segment widening distally to palm; palm oblique, slightly excavated in the middle with numerous spines differing in size;

the postero-distal angle bearing clusters of spines. Segment 7 shorter than palm, the tip extending about four-fifths length of palm; segment devoid of spines.

Peraeopod 1—Segment 1 ovate, distal margin rounded; all margins lightly setose. Segment 2 as long as segment 1 is deep, slightly narrower proximally than distally, with several fairly long simple spines, posteriorly and at the postero-distal angle, a few smaller ones anteriorly; length about 3 times maximum width. Segment 3 about as long as wide; a few simple spines postero-distally. Segment 4

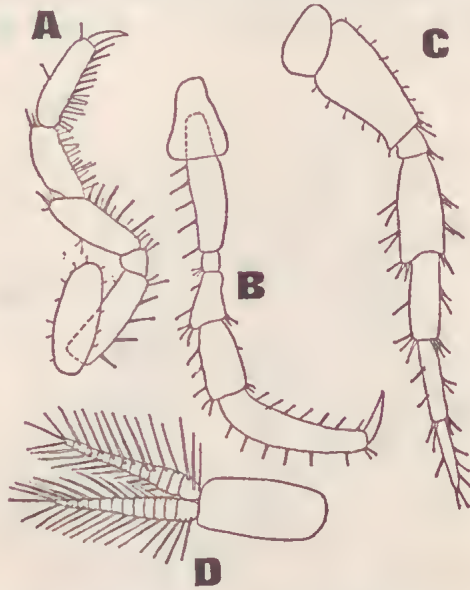


FIG. 15—*Peraediceropsis raymondi* (n. sp.). A. Peraeopod 1, c. \times 45. B. Peraeopod 2, c. \times 50. C. Peraeopod 5, c. \times 30. D. Pleopod 1, c. \times 35.

broadening distally, about two thirds the length of segment 2, strongly spined on posterior margin, a few spines along anterior margin. Segment 5 subtrapezoidal, about four-fifths length of segment 4, but narrower; heavily spined on posterior margin; a small cluster of spines at the antero-distal angle. Segment 6 subrectangular, with anterior margin slightly convex; 1.5 times length of segment 5; equipped with profuse long spines along posterior margin; several minute spines along anterior margin. Segment 7 sharp, slightly curved, approximately one third the length of segment 6.

Peraeopod 2—Segment 1 subtrapezoidal, minutely setose. Segment 2 subrectangular, lightly spined on anterior margin, posterior margin setose. Segment 3, subtrapezoidal, slightly longer than wide, a cluster of spines at antero-distal angle. Segment 4 broadening distally; well equipped with stout spines particularly at the antero-distal and postero-distal angles. Segment 5 subrectangular, one and one half times as long as segment 4; similarly spined. Segment 6 subrectangular with curved margins nearly twice length of segment 5; spines on both anterior and posterior margins. Segment 7 sharp, slightly curved; about one half length of segment 6.

Peraeopod 3—A little larger than peraeopod 2. Segment 1, small and produced posteriorly. Otherwise similar to peraeopod 2.

Peraeopod 4—Slightly longer than peraeopod 3, but very similar in structure; segment 1 small and produced posteriorly.

Peraeopod 5—The longest. Segment 1 small, expanded somewhat posteriorly. Segment 2 large, expanded posteriorly, tapering slightly distally; minutely spined along anterior margin, a couple of larger spines at the antero-distal angle. Segment 3 subtrapezoidal, as broad as long, a couple of stout spines at the antero-distal angle. Segment 4 subrectangular, length about two and one half times breadth, postero-distal angle expanded distally; both anterior and posterior margins equipped with clusters of stout spines. Segment 5 as long as segment 4 but narrower; clusters of spines along margins, particularly at the distal angles. Segment 6 as long as segment 5 but narrower; heavily spined at distal angles. Segment 7 about three-quarters length of segment 6 and half as broad; tapering distally and not curved; heavily spined along its length.

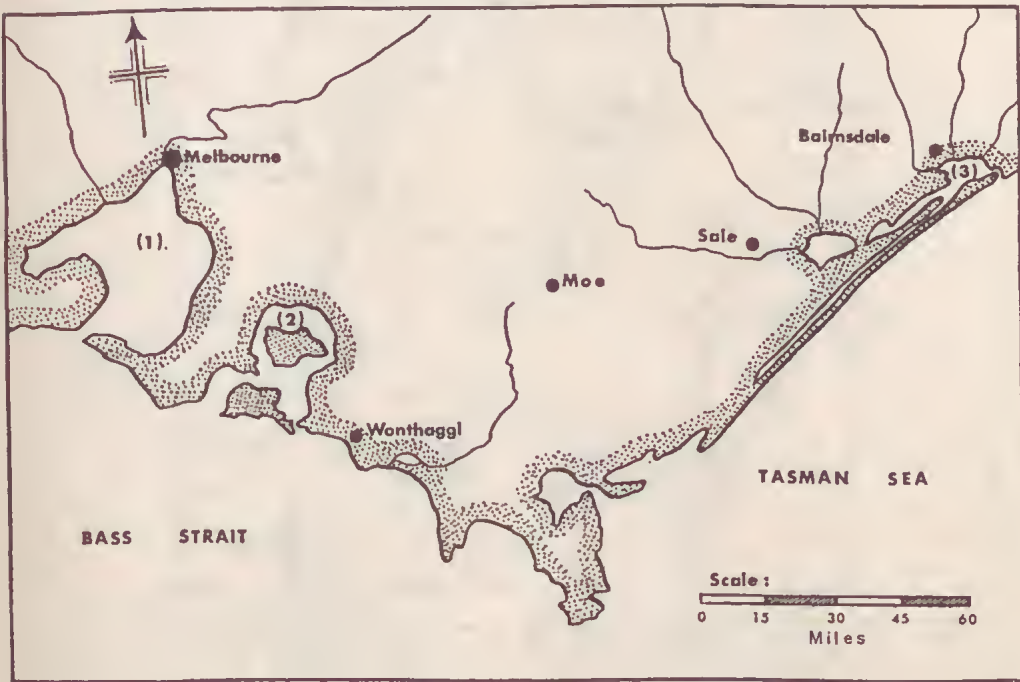


FIG. 16—Eastern Coast of Victoria. Port Phillip Bay (1); Western Port Bay (2); Gippsland Lakes System (3).

Pleopods—All alike and unmodified. Biramous, rami similar and subequal in length with peduncle.

Uropod 1—The largest. Biramous, rami about three-quarters the length of peduncle; a row of short stout spines running along length of peduncle just inside the outer margin.

Uropod 2—Smaller than uropod 1; biramous, inner ramus significantly longer than outer; otherwise similar in structure to uropod 1.

Uropod 3—Smaller than uropod 1; biramous, rami subequal in length with peduncle. Inner ramus slightly longer than outer; both rami supplied with several stout spines on their inner margins. Peduncle subrectangular, bearing several stout spines in the distal region.

Telson—Rounded and entire; devoid of spines.

Gills—Simple sae-like structures.

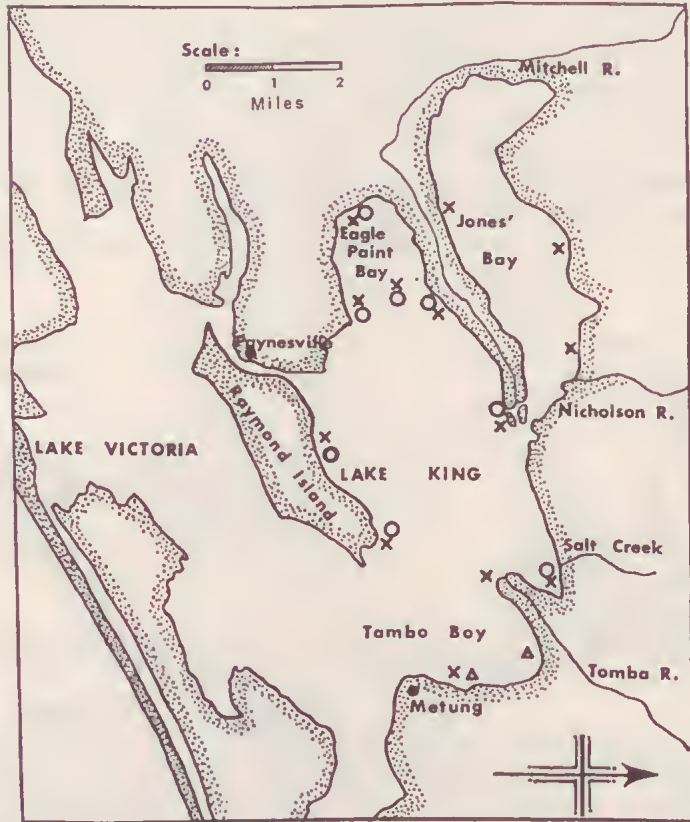


FIG. 17—Lake King showing distribution of new species. *Limnoporeia kingi* (x); *Paroediceropsis raymondi* (o); *Urohaustorius metungi* (Δ).

DESCRIPTION OF FEMALE: Maximum body length recorded 4.5 mm; smaller than males of corresponding age. Apart from gnathopod 2 and oostegite the female is morphologically like the male.

Gnathopod 2—Like that of male except for segment 6 which does not widen distally to palm as does male. In the female segment 6 is more broadly ovate than is the male.

Oostegites—Subovate; equipped with spines of varying length around the margin.

Types: *Locality*—The holotype is one of a collection made at Eagle Point Bay, Lake King, Victoria, Australia in June 1956.

Repository—The holotype (No. J.157) and paratypes (No. J.158) are lodged at the Museum of Natural History, Melbourne, Australia.

VARIATION IN MATERIAL EXAMINED: Sixteen specimens were dissected and measured; the males, of which eleven were dissected, varied in length from 5.0 mm to 1.75 mm with a mean length of 2.9 (S.D. = 0.8), while the females varied in length from 4.5 mm to 1.5 mm with a mean length of 2.5 mm (S.D. = 0.7).

The second antennae show a considerable degree of variability, with specimens ranging from 2.5 mm to 0.5 mm with a mean length of 1.5 mm (S.D. = 0.5). The fifth pereopod, the longest, ranges in length from 3.0 mm to 1.5 mm with a mean length of 2.2 (S.D. = 0.4).

DISTRIBUTION: Present records: *Victoria*, Lake King (April 1957). This species appears to be widely distributed in the main body of Lake King in association with *Limnoporeia kingi*. The specific name is derived from the name of Raymond Island along the shores of which this animal is common.

ECOLOGICAL NOTES: The species was observed to burrow in both coarse and fine sand as well as mud. This is not surprising as the form is structurally well adapted for burrowing.

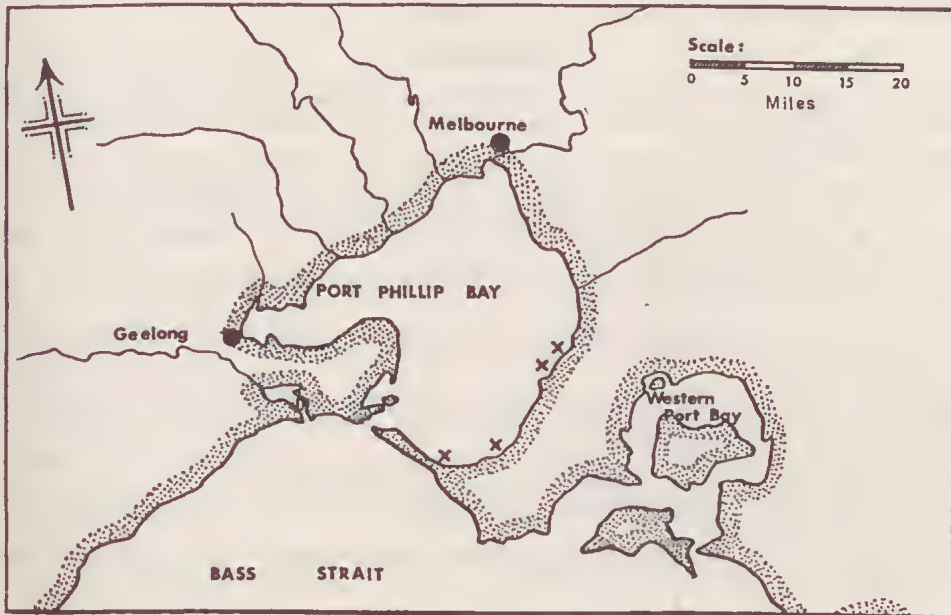


FIG. 18—Port Phillip and Western Port Bays showing distribution of *Amphoediceros willisi* (x).

ANATOMICAL STATISTICS OF *Paroediceropsis raymondi* (n. sp.)

Characteristic	Maximum (mm)	Minimum (mm)	Mean (mm)	Standard Deviation	Length of appendage/body length ratio	
Body length ♂ (Rostrum to telson)	5.0	1.75	2.9	0.8	—	
	♀	4.5	1.5	2.5	0.7	—
Antenna 1	1.5	0.25	1.0	0.4	0.3	
" 2	2.5	0.5	1.5	0.5	0.5	
Gnathopod 1	1.25	0.5	1.0	0.2	0.3	
" 2	1.75	0.75	1.3	0.3	0.5	
	+♂♂	1.25	0.75	1.0	0.2	0.3
Peraeopod 1	2.0	0.75	1.2	0.3	0.4	
" 2	2.0	0.75	1.2	0.3	0.4	
" 3	2.25	0.75	1.5	0.3	0.5	
" 4	2.5	1.0	1.6	0.1	0.6	
" 5	3.0	1.5	2.2	0.4	0.8	
Uropod 1	1.5	0.5	0.9	0.3	0.3	
" 2	1.25	0.5	0.8	0.2	0.3	
" 3	1.0	0.25	0.6	0.3	0.2	
Pleopod 1	1.5	0.5	1.0	0.3	0.3	

Acknowledgements

In carrying out this and related studies the author had valued assistance from many sources. However, grateful acknowledgement is due chiefly to Mr. A. G. Willis of the University of Melbourne for his constructive criticism and encouragement over a considerable number of years.

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